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EDMC

***USDOE Hanford 300 Area, 300-FF-1 Operable Unit,
Hanford Site, Benton County, Washington
Explanation of Significant Difference (ESD)***

Introduction

Site Name and Location

USDOE Hanford 300 Area, 300-FF-1 Operable Unit, Hanford Site, Benton County, Washington

Lead and Support Agencies

The U.S. Environmental Protection Agency (EPA) is the lead regulatory agency for the 300-FF-1, the U.S. Department of Energy (DOE) is lead agency for performing the remedial actions at 300-FF-1, and the Washington State Department of Ecology (Ecology) is the support agency (the Tri-Parties).

Statutory Citation for an ESD

In Section 117(c) of the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA), provisions are made for addressing and documenting changes to the selected remedy that occur after the Record of Decision (ROD) is signed. This ESD documents the changes to the selected remedy in accordance with CERCLA Section 117(c). Additionally, since significant, non-fundamental changes are being made to the original remedy, documentation procedures specified by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Section 300.435(c)(2)(i), have been followed.

Need for ESD

The ROD for 300-FF-1 calls for excavation and disposal of soil and debris from contaminated sites in 300-FF-1. The remediation wastes are to be disposed of in the Environmental Restoration Disposal Facility (ERDF). The ROD also specified that any wastes not meeting land disposal restriction (LDR) criteria would either require treatment or a treatment variance. During the remediation, a waste site was unexpectedly found to be contaminated with lead in a form and quantity that causes the soil to be a RCRA

hazardous waste that is required to meet the LDR restrictions prior to land disposal. The waste site is known as 628-4 or Landfill 1D. Because the soils at Landfill 1D meet the criteria for an LDR treatability variance under 40 CFR 268.44(h) and this change will reduce cleanup cost and complexity, while maintaining protection for human health and the environment, a site-specific treatment variance is approved through this ESD.

Administrative Record

This ESD is part of the Administrative Record for the 300-FF-1 Operable Unit, as required by 40 CFR 300.825(a)(2), and is available to the public at the following locations:

ADMINISTRATIVE RECORD (Contains all project documents)

U.S. Department of Energy
Richland Operations Office
Administrative Record Center
2440 Stevens Center, Room 1101
Richland, Washington 99352

INFORMATION REPOSITORIES (Contain limited documentation)

DOE Richland Public Reading Room
Washington State University, Tri-Cities
2770 University Drive
CIC, Room 101L
Richland, Washington 99352

Portland State University
Branford Price Millar Library
Science and Engineering Floor
SW Harrison and Park
Portland, Oregon 97207

University of Washington
Suzzallo Library
Government Publications Room
Seattle, Washington 98195

Gonzaga University
Foley Center
E. 502 Boone
Spokane, Washington 99258

Site History

The Hanford Site was listed on the National Priorities List (NPL) in November 1989 under the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)* as amended by the *Superfund Amendments and Reauthorization Act of 1986 (SARA)*. The Hanford Site was divided and listed as four NPL Sites: the 100 Area, the 200 Area, the 300 Area, and the 1100 Area. Each of these areas was further divided into operable units, which are groupings of individual waste units based primarily on geographic area and common waste sources. The 300 Area NPL site consists of the following operable units: 300-FF-1, 300-FF-2 and 300-FF-5. The 300-FF-1 Operable Unit addresses contaminated soils, structures, debris, and burial grounds.

The 300-FF-1 Operable Unit covers an area of approximately 47.4 ha (117 acres) and contains many of the current and past 300 Area liquid waste disposal units. The 300-FF-1 Operable Unit is bounded on the east side by the Columbia River and on the north, south, and west sides by the 300-FF-2 Operable Unit. The primary contaminants in 300-FF-1 are isotopes of uranium and cobalt, as well as arsenic, cadmium, and PCBs. For Landfill 1D, the only contaminants are uranium and the newly-discovered lead. The lead contamination was discovered by random testing during the cleanup of Landfill 1D. There were no disposal records found, so the source of the lead-contaminated soil is unknown. In order to determine the amount of material that was potentially affected, the wastes (soil and debris) were consolidated within the

boundaries of Landfill 1D. Samples were taken from the resulting stockpile and from the “native” soil beneath the waste site. The native soils showed no evidence of lead contamination.

The ROD, signed July 17, 1996, addresses actual or threatened releases from the wastes sites in the 300-FF-1 Operable Unit. The major components of the selected final remedy for 300-FF-1 include:

- Removal of contaminated soil and debris;
- Disposal of contaminated material at the Environmental Restoration Disposal Facility;
- Recontouring and backfilling of waste sites, followed by revegetation;
- Institutional controls to ensure that unanticipated changes in land use do not occur that could result in unacceptable exposures to residual contamination.

Description of the Significant Difference and the Basis for the Difference

Description

This ESD approves, in accordance with 40 CFR 268.44(h)(3), a site-specific variance from an applicable LDR treatment standard and establishes an alternative treatment standard for lead of 25 mg/L, as determined using the Toxicity Characteristic Leach Procedure (TCLP). Soils from Landfill 1D which are contaminated with lead may be disposed of in ERDF without treatment if they meet the alternative treatment standard. Soils which contain lead above 25 mg/L, as determined by the TCLP, must be treated such that the TCLP concentration for lead is reduced by 90% or less than 3.7 mg/L, whichever is less stringent. These treatment levels are also part of the treatability variance being granted in this ESD. The remedial action objectives established in the 1996 ROD are not changed by this ESD.

Basis

During the remediation, the soil in Landfill 1D was unexpectedly found to be contaminated with lead. Landfill 1D also contains debris that is not contaminated with lead but may be radioactively contaminated. There is no practical way for the debris to be certified free of radioactive contamination, so the debris must be disposed of in ERDF. However, the lead was in a form and quantity that caused the soil to designate as a characteristic hazardous waste that is required to meet the LDR restrictions prior to land disposal. Samples from the site tested from less than 1 to 19 mg/L TCLP. The hazardous waste designation level for lead in soil is 5 mg/L TCLP. The LDR standard for lead at this site is also 5 mg/L TCLP because the standard was frozen at that level through the 1996 ROD.

This ESD exercises an option in the proposed plan and ROD for 300-FF-1 to grant a site-specific treatability variance under RCRA (40 CFR 268.44(h)(3)) because treatment of the lead-contaminated soil from this site to the level specified in the soil treatment standards would result in concentrations that are below concentrations necessary to minimize short- and long-term threats to human health and the environment.

This variance imposes an alternative treatment standard for lead that, using a reasonable maximum exposure scenario, achieves a constituent concentration that is protective and minimizes threats to human health and the environment posed by land disposal of the waste. The alternative treatment standard for Landfill 1D is 25 mg/L, determined by the TCLP. To determine that this alternative level is protective is a 2-step process. First, considering direct exposure, the reasonable maximum exposure scenario for the ERDF is an industrial scenario. For the scenario at ERDF, a total lead concentration that would be protective for direct exposure is 1000 mg/kg. The mean total lead concentration for this site is 576 mg/kg, well below that level. Second, considering potential groundwater impacts, testing of the soils underlying the wastes in this site do not show any elevated lead, even though the wastes were placed there

20 to 30 years ago. Also, tests were performed using a modified TCLP test where, instead of the prescribed leaching solutions, leachate from ERDF was used to test the leachability of the lead. The highest lead concentration in these tests was 0.05 mg/L. Therefore, the alternative treatment standard for lead of 25 mg/L by TCLP for Landfill 1D is protective of human health and the environment.

This change will reduce cleanup cost and complexity, while maintaining protection for human health and the environment. At Landfill 1D, there is approximately 725 cubic meters of soil and 200 cubic meters of debris, completely intermingled. The soil meets the 300-FF-1 Operable Unit radiation cleanup standard, but is lead-contaminated. The debris is not lead-contaminated, but cannot be certified as radiation-free. The debris must be removed and disposed in ERDF, in order to be protective. One option is to screen out the debris in order to dispose of it in ERDF, leaving the soils in place and not triggering LDR issues. This would be a labor-intensive manual task, with an increased potential for personnel injury. The other option would be to treat the soil and debris together, which would cost approximately \$200,000 more. This change improves on the other two options by reducing the complexity (no sorting, with the increased potential for injury) and the cost (\$59,000 versus \$253,000). In addition, it would be more protective, or there would be greater assuredness of protection, to dispose of both the soil and debris in ERDF as described by this change.

Support Agency Comments

Consistent with EPA guidance, Ecology reviewed the ESD. The Department of Ecology provided the following comments:

The Washington State Department of Ecology (Ecology) supports the removal of the lead and uranium contaminated waste and soil from the Landfill 1D and placing the contaminated soil in the Environmental Restoration Storage Facility (ERDF). Therefore, Ecology supports the issuance of a variance by the U.S. Environmental Protection Agency (EPA) to allow ERDF to accept the uranium and lead contaminated waste and soil.

Ecology understands removal of the lead and uranium contaminated waste and soil at Landfill 1D is incomplete. Remaining lead and uranium contaminated waste and soil will be removed from the northwest and southwest portions of the landfill to a total depth no less than thirteen (13) feet below landfill grade.

Ecology has also been informed that confirmation sampling related to this site has not been performed. After the review of the information provided, only field screening data is available to verify the completed remediation of Landfill 1D. In addition, the average lead values reported in this ESD appear to include a mixture of field screening data and laboratory analyses and as such do not provide an accurate representation of the lead contamination in Landfill 1D. As field-screening data cannot be used to verify contamination removal, confirmatory sampling will be performed to document remaining contamination levels. Furthermore, as the Sample and Analysis Plan (SAP) for Landfill 1D must be updated to reflect the addition of lead as a constituent of concern, Ecology will review and comment on the updated SAP. Ecology will also take split samples once the verification sampling effort begins. The cleanup level for lead must be protective of all pathways in the 300 Area including impacts to flora, fauna, groundwater, drinking water and, ultimately, the Columbia River.

Ecology also understands the 300-FF-1 Record of Decision (ROD) did not establish remedial action objectives for lead at Landfill 1D. Due to the discovery of lead

contamination at Landfill 1D, the landfill's proximity to the Columbia River, and the landfill's proximity to groundwater, it may be necessary for EPA to develop a second ESD to establish the cleanup level for lead at Landfill 1D. Verification sampling will determine if a second ESD is necessary.

Ecology is approving this Explanation of Significant Difference as required by the Comprehensive Environmental Restoration and Cleanup Liability Act (CERCLA) to allow transferral of the currently identified contaminated waste and soil into ERDF. This concurrence does not include any agreement upon the cleanup levels for lead at Landfill 1D. Ecology concurs with the scope of this ESD as stated in the September 28, 1999 letter from the EPA "[T]he sole purpose of the Explanation of Significant Difference (ESD) is to grant a variance to the land disposal restriction treatment standards to be applied at one waste site in the 300-FF-1 Operable Unit." Ecology will remain actively involved in the final resolution of the issues associated with the discovery of lead in Landfill 1D.

Affirmation of the Statutory Determinations

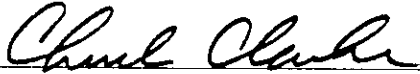
The amended remedy remains protective of human health and the environment, complies with Federal and State applicable or relevant and appropriate requirements directly associated with these remedial actions, and is cost-effective. The remedy utilizes permanent solutions and alternative treatment (or resource recovery) technologies, to the maximum extent practicable for this site. However, because treatment of the principal threats of the site was not found to be practicable, the remedy does not satisfy the statutory preference for treatment as a principal element.

Because this remedy will still result in hazardous substances remaining on-site above health-based levels, a review will be conducted within five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

Public Participation Activities

The original proposed plan and ROD contained the option for issuing a treatability variance and no comments were received regarding that provision. This ESD was also discussed with members of the Hanford Advisory Board (a Site-Specific Advisory Board) and no negative comments were made. A fact sheet regarding this ESD and the treatment variance will be mailed out to the Hanford mailing list of interested parties.

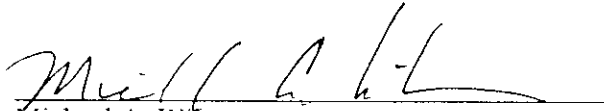
Signature sheet for the Explanation of Significant Differences to the Record of Decision for the USDOE Hanford 300 Area, 300-FF-1 Operable Unit, between the United States Department of Energy and the United States Environmental Protection Agency, with concurrence by the Washington State Department of Ecology.



Chuck Clarke
Regional Administrator, Region 10
United States Environmental Protection Agency

1/12/00
Date

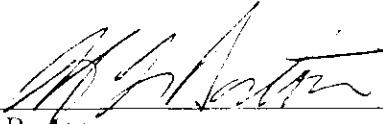
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A handwritten signature in black ink, appearing to read "Michael A. Wilson", written over a horizontal line.

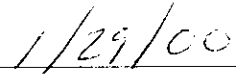
Michael A. Wilson
Manager, Nuclear and Mixed Waste Program
Washington State Department of Ecology

1/4/00
Date

Signature sheet for the Explanation of Significant Differences to the Record of Decision for the USDOE Hanford 300 Area, 300-FF-1 Operable Unit, between the United States Department of Energy and the United States Environmental Protection Agency, with concurrence by the Washington State Department of Ecology.



Harry L. Boston
Deputy Manager for Site Transition
Richland Operations Office
United States Department of Energy



Date